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**Microstructural organization of polydimethylsiloxane based polyurethane block copolymers** REBECA HERNANDEZ, Penn State University, JADWIGA WEKSLER, AJAY PADSALGIKAR, AorTech Biomaterials, JAMES RUNT, Penn State University — Microphase separation was investigated for polyurethane block copolymers synthesized from MDI and 1,4 butanediol as the hard segments, and poly(hexamethyleneoxide) (MW  $\sim$  700) and bis(6-hydroxyethoxypropyl) poly(dimethylsiloxane) as soft segments (MW  $\sim$  1000). The neat PDMS-based diol presents two segmental relaxations corresponding to the principle siloxane repeat unit and to the hydroxyethoxypropyl end group segments, respectively. When incorporated in the polyurethane, the siloxane units form a phase without intermixing with hard segments and the polyether end group segments are mixed with the second macrodiol and some short hard segment sequences. The microdomain morphology was characterized by atomic force microscopy and small-angle X-ray scattering, and the scattering data were analyzed using an approach based on a modified core-shell model. The model includes core hard segment particles (MDI-BDO), surrounded by a mixed polyether shell (PHMO and hydroxyethoxypropyl end group segments), and a matrix composed of the siloxane units.

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